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six or more, deeply sutured and exhibiting strong growth striae. Apex whorls closely and slightly pitted. Aperture and umbilical region covered by a portion of the matrix in which the shell was imbedded.

Diameter (maximum), 24 mm., probably 26 to 26½ mm. when perfect. Elevation, about 10 mm. A sufficient portion of the shelly substance intact admits of the above description. Number of specimens, six; of these the individual described is the largest and most perfect. The smaller examples consist mainly of the upper whorls.

With more and better material it is quite probable the foregoing might prove to be an angulated, dwarfed, depressed aspect of the living *fidelis*, or *mormonum*; it also suggests the form known as *Hillebrandi*. Nearly all of the material is in a very unsatisfactory condition, with no color indications to assist in determination. While for these reasons the conclusions may be regarded as more or less arbitrary, the general character and relationship is believed to be fairly well pointed out.

PYRAMIDULA LECONTEI N. S.

Shell small, orbicularly depressed, widely and deeply umbilicated; whorls four and a half to five, rounded, closely and conspicuously ribbed except on the apex, which is nearly smooth; the ribbing extending into the umbilical cavity; the grooves between the ribs nearly as wide as the ribs are thick; the suture deep; aperture nearly circular or rounded lunate; edge of lip simple. Diameter (maximum), 8½ mm. Elevation, nearly 5 mm. A single example; the last whorl has been broken back somewhat; the maximum diameter was probably 9 to 9½ mm. The specimen appears to be scarcely mature. The number, prominence and regularity of the ribs make this a very pretty shell. The general facies suggests relationship with the extraordinary group of helicoid forms that are so widely distributed throughout the vast area denominated by Mr. W. G. Binney* the 'Central Province,' and listed by Dr. Pilsbry in his recent catalogue, as number 340† (*P. strigosa* and numerous

* 'Manual of American Land Shells,' Bull. 18, U. S. National Museum.

† 'Classified Catalogue of Land Shells of North America,' etc., Philadelphia, April, 1898.

races or varieties). A comparison of *P. Lecontei* kindly made for me by Professor Dall, with the large series of the *strigosa* group in the National Museum, determines it, as he says, to be 'different from anything we have in the collection.'

In memory of the late Professor Joseph Le Conte, I have attached his name to the above form.

In addition to the species herein described, the material submitted to me by Professor Merriam included a small globose form about the size of a small pea; there are several examples, so disguised by adherent particles of matrix as to make it doubtful whether they belong to terrestrial or aquatic groups, with a presumption in favor of the first.

Partially exposed in portions of a fine compressed sediment of lacustrine origin are several casts of a very large *Limnæa*, suggestive in a general way of the circumboreal *L. stagnalis*, but so much distorted as to preclude a more definite description. For convenience this may be known provisionally as *L. maxima*.

Professor Merriam has now in preparation a paper on the paleontology of the John Day region, which will contain in detail the special data relating to the occurrence of the various forms above referred to as well as figures of the species I have described.

ROBT. E. C. STEARNS.

CURRENT NOTES ON PHYSIOGRAPHY.

THE ISTHMUS OF PANAMA.

AN essay on the 'Geology of the Central Portion of the Isthmus of Panama,' by Hershey (*Bull. Dept. Geol. Univ. Cal.*, II., 1901, 231-267), includes an account of the surface features in terms of the two chief cycles of denudation that have had effect there. The axial Cordillera de Veraguas, trending east and west, is described as a dissected plateau whose general surface, once a lowland of degradation, consisting in part of syenite and intrusive volcanic rocks, is now raised to an altitude of 3,000 feet. The valleys in it are deep, narrow, and steep-sided. Eliminating them, the district would be a high plateau with a width of 20 or 25 miles, arched a little along an east-west medial line, but otherwise

remarkably even. The ridges often have nearly level crest-lines for several miles, and rise to similar altitudes; and there are some extended flats at the height of the ridge tops. Southward from the mountains there is a lower and younger and much better preserved peneplain, uplifted a few hundred feet, sloping gently toward the sea and sharply trenched by young valleys 'the most beautiful and perfectly base-leveled land' that the writer has seen. The interfluves are very slightly arched and are remarkable for their long gentle slopes. Many low monadnocks rise above the plain, and these, together with a 10- or 20-mile belt of irregular ridges and peaks bordering the mountains, are taken to be the remnants of the older peneplain, here less preserved than in the harder rocks of the Cordillera. The border of the younger peneplain, determined by the ending of its gently undulating strata, is followed by a young coastal plain, trenched like the peneplain by narrow valleys and cliffed along the shore; here the interfluves are flat, instead of being gently arched as further inland. The coastal plain, as an area of marine deposition, is the equivalent of the younger peneplain as an area of subaerial degradation. On the northern side of the isthmus, a narrow, dissected peneplain slopes gently from the Cordillera to the seacoast. This plain bears auriferous gravels near the mountain base. The slopes of the two younger peneplains, north and south of the Cordillera, and the greater height that is believed to have been gained by the older peneplain along the mountain axis, suggest a repeated up-arching of the isthmus along an east-west line. A recent depression has occurred, especially noticeable along the southern coast, where there are several good examples of partly drowned valleys.

THE GRECIAN ARCHIPELAGO.

PHILIPPSON'S latest studies in classic lands concern the Cyclades or southern island group of the Grecian archipelago ('Beitr. zur Kenntniss der griech. Inselwelt,' *Pet. Mitt. Ergänzungsheft*, 134, 1901, 172 pp., 4 maps). The islands are, in the most general statement, the remains of an old-mountain region

(Rumpfgebirge) reduced to moderate but not faint relief, then elevated and much dissected by streams and waves during slow depression, finally more rapidly submerged and again vigorously attacked by the sea. The geological structure is irregular and not clearly related to the distribution of the individual islands. The old-mountain uplands are best preserved where the rocks are somewhat uniformly resistant, as on Andros; elsewhere, variety of structure leads to variety of form, Naxos being of most rugged relief. The valleys are rather sharply incised beneath the uplands; the author parenthetically notes that they would be called 'young' by American morphologists. They represent the headwater parts of what was once a much more extensive drainage system, developed while the land stood higher than at present. During that time the sea is believed to have actively abraded the coast, producing a platform of tolerably even surface from three to fifteen miles wide, with greater breadth on the exposed than on the protected sides of the islands. The depth of the platform decreases from about 200 met. at its outer border to about 80 or 50 met. near the islands; and hence a slow depression is inferred during abrasion. Then came the more rapid submergence, bringing the sea about to its present level on the steep coast that had previously been cut around the remnant islands, and transforming the valleys into bays whose depth corresponds to that of the inner border of the submerged platform. The exposed parts of the present shore line are usually bold and ragged. Few of the islands have lowland plains, those on the western side of Naxos being the largest.

In not making explicit mention of the work of subaerial erosion during the inferred abrasion of the now submerged platform, Philippson's summary may give the impression that the greater part of the old-mountain uplands were consumed by the sea. It is probable, however, that many deep and broad valleys were eroded in the original uplands by streams, while the outer border of the platform was cut away by the waves; and that the further abrasion by the sea was aided not only

by slow depression but also by the work already then accomplished by subaerial erosion. Only by supposing an extensive system of open valleys to have been developed during the earlier advance of wave work on the retreating coast can satisfactory explanation be given for the scattered arrangement of the remnant islands on the abraded platform.

THE SOUTHERN URALS.

THE excursion of the Russian geological congress turned attention to the Urals as an example of an uplifted and dissected peneplain. Further information on this subject is found in some 'Topographic notes on the Ural Mountains,' by Purington (*Bull. Amer. Geogr. Soc.*, XXXIII., 1901, 103-111). The southern extension of this old chain, where the structure is as greatly disordered as elsewhere, is for the most part a gently undulating plain, the Orenburg steppe, hundreds of miles in extent. Its surface is compared to that of a calm sea, swept by huge, flat, crossing swells, 100 or 200 feet high and from two to four miles from crest to crest. The general turf cover of the nearly treeless plain is frequently broken by low reefs of quartzitic schists, traceable for long distances, and thus revealing something of the underground structure. Some of the more decomposable schists are weathered so deeply that mine shafts have been dug 100 feet deep before blasting was necessary. Water-worn gold-bearing gravels are abundant on the undulating plain, but are frequently too far from the streams for profitable washing. Low monadnocks of the more resistant rocks occur in the region of the steppe; further north in the forested Urals the higher extension of the same peneplain is dominated by dome-shaped monadnocks, rising 3,000 and 4,000 feet over the uplands. The rivers of the steppe have now eroded broad and shallow valleys from 50 to 200 feet deep; the sides of the valleys are well defined where they rise to the upland, whose borders are dissected by ravines for a few hundred feet. The valley floors are sheeted with gravels in which the rivers meander freely.

W. M. DAVIS.

THE STRECKER COLLECTION OF 'LEPIDOPTERA AND THE AMERICAN MUSEUM OF NATURAL HISTORY.

SINCE the death of Dr. Herman Strecker, many representatives of large museums have visited his former home in Reading, Pennsylvania, and commendable zeal has been displayed in their efforts to secure the Strecker collection of lepidoptera for their respective institutions. The heirs, however, have insisted that no deviation would be made from the original valuation placed upon the collection by Dr. Strecker, namely \$20,000. The Right Reverend Dean Hoffman has authorized the American Museum to purchase the collection. This is not the first time that Dean Hoffman has benefited the people of New York by gifts of like character, and the silent appreciation of the thousands that visit the superb exhibition of butterflies and moths which his generosity has made possible is itself a testimonial of public gratitude.

The growth of the Department of Entomology within the last few years has been phenomenal. In 1890 Mrs. M. S. Elliot donated the 'Elliot Collection,' consisting of six thousand local specimens, all reared from caterpillars, and consequently as nearly absolutely perfect as specimens can be—butterflies that are captured in the field are almost invariably injured. In 1892 friends of the Museum contributed some \$15,000 toward the purchase of the 'Harry Edwards Collection.' This was a general collection of insects, but contained some forty to fifty thousand butterflies and moths from various parts of the world; among these were some three hundred which were absolutely new to science. For a long time this has remained the principal part of the Museum collection. In 1891 a collection of insects numbering some ten thousand, and containing at least three thousand North American Lepidoptera, was donated by Mr. James Angus. Mr. Angus had made a specialty of one genus of moths, the *Catocala*, and in this one genus alone he had upwards of fifteen hundred specimens. In 1897 Mr. William Schaus, then of New York, but now of England, donated a remarkably complete collection of Old World Lepidoptera, numbering